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Book reviews and notices

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Introduction

The emphasis of this instalment is on tropical mycology, with mycofloristic accounts of Panama and a National park in Malaysia, a revision of the *Boletales* species described by Corner, and cercosporoid taxa from India. The European *Strophariaceae* are the focus of a new book in the series Fungi Europaei, and the economically important *Aspergillus* is the topic of a new volume of Studies in Mycology.

This contribution concludes with one new book announcement.

Ascomycetes

Taxonomic studies in the genus *Aspergillus*. Edited by R.A. Samson, J. Varga & J.C. Frisvad. 2011. Studies in Mycology no. 69. CBS-KNAW Fungal Biodiversity Centre, P.O. Box 85167, 3508 AD Utrecht, The Netherlands. <info@cbs.knaw.nl>. Pp. iv + 97, illustr. ISBN 978-90-70351-86-1. Price: 40 €.

There have been so many publications on *Aspergillus* systematics in recent times, not least "*Aspergillus* Systematics in the Genomic Era" (Studies in Mycology no. 59, 2007; see Mycotaxon 107: 509–511, 2007), that it might have been assumed that most species had now been discovered and named. This collection of six papers, all involving the world's most respected authorities on the genus, shows that is far from the case: in even such an exceptionally well

* Books for consideration for coverage in this column should be mailed to the Book Review Editor at the address above. All unsigned entries are by the Book Review Editor.

studied genus, we have still a long way to go to approach a complete global inventory.

In sect. *Nigri,* four new species are described, taking the total to 26; additionally *A. foetidus* is placed as a synonym of *A. niger,* and molecular data reveal that two further named species are colour mutants of others. Within the black species, a separate study shows that growth rate parameters and hydrolase activities are characters that can assist in species separations in the group. In addition, an L-arabinose transcriptional activator regulating the pentose catabolic pathway and involved in enzyme release is described for *A. niger;* it appears to be confined to *Eurotiales* and to have arisen by gene duplication when the order (or family) split from other filamentous ascomycetes. In sect. *Terrei*, several taxa previously treated as subspecies or varieties of *A. terreus* prove to be distinct lineages and are recognized as separate species, necessitating the introduction of three new names; an additional species is newly described, and the teleomorph-producing *Fennellia nivea* is found to belong elsewhere. Sect. *Flavi* is considered to include 22 species, amongst which are several formerly placed in other sections, and two new aflatoxin-producers distinguished by extrolite profiles as well as sequence data; these have cholesterol-reducing and hepatoxic or neurotoxic extrolites. Finally, 21 species are accepted in sect. *Usti*, of which five are described as new. That section includes two species with teleomorphs —*Emericella heterothallica* and *Fennellia monodii*— for which binominals in *Aspergillus* (with a new combination for *A. monodii*) are used in anticipation of the changes in the CODE (now the INTERNATIONAL CODE OF NOMENCLATURE FOR ALGAE, FUNGI, AND PLANTS) subsequently effected in July 2011.

The papers also demonstrate the value of the polyphasic approach, using several different gene sequences, extrolite, cultural, and other features in species circumscriptions. It was also gratifying to see such an almost seamless transition to one name for one fungus adopted here by the key workers on these organisms, which augurs well for other cases where a monophyletic group has a particularly familiar anamorph-typified generic name. As has become the norm in the STUDIES, all papers are illustrated by exceptionally fine photographs of conidial heads and colonies, many in colour, and an occasional SEM micrograph. All struggling to identify *Aspergillus* species in the sections treated will need to consult a copy, either by having one to hand or accessing it free of charge through the CBS website.

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Cercosporoid fungi of India. By Kamal, 2010. Bishen Singh Mahendra Pal Singh, 23A New Connaught Place, Dehre Dhun, 248 001 Uttarakhand, India. Pp. vii + 351, figs 47, pl. 1. ISBN 978-81-211-0753-2. Price: US$ 90.

Kamal, a former professor at Gorakhpur University, has been involved in the documentation of Indian leaf-inhabiting fungi for over 30 years. In such speciose groups as the cercosporoid fungi, in which over 3000 species have been described, periodic regional syntheses are necessary to translate global monographic work into those accessible at other geographical scales. Following the landmark monograph of Chupp (1954), which accepted 1419 species, an account of the Indian representatives was prepared by Vasudeva (1963), who enumerated 260 species. Now, following on from the critical compilation of Crous & Braun (2003; see Mycotaxon 89: 518, 2003), Kamal has similarly provided an update for India. Of the 1815 cercosporoid fungi reported to have been recorded from India up to 2009, 1050 are accepted, including descriptions of four new species. These are dispersed between the genera *Asperisporium* (5 spp.), *Cercospora* (254), *Distocercospora* (1), *Passalora* (143), *Prathigada* (8), *Pseudocercospora* (527), *Scolecostigmina* (12), *Sirosporium* (15), *Stenellopsis* (1), *Stigmina, Verrucisporota* (4), and *Zasmidium* (88). A staggering 129 new combinations are made, and seven replacement names introduced. It should be noted that in the case of the new names and some combinations, "Kamal" is omitted (corrected by an erratum slip pasted in at the front of the book). Also, where new names are introduced, the authors of the replaced name should not have been placed in parentheses — for example it should be *C. holarrhenigena* "Kamal, nom. nov." and not "(R.K. Srivast., N, Srrivast. & A.K. Srivast.) nom. nov." (p. 51).

In the arrangement of the entries within the accepted genera, the species names precede the generic names, an unusual practice following Crous & Braun (2003). However, here they are not treated as a single alphabetical series but have been separated into the accepted genera. The core elements of the nomenclatural information, including types, also seems to have been copied directly from the 2003 work, with an identical layout and punctuation — and the author does indicate in the introduction that the work is "based largely on Crous and Braun (2003)" (p. 5). However, it is stated that type material in the principle Indian herbaria was examined unless otherwise stated, where decisions were based on descriptions and illustrations. References to hosts and localities in India, in some cases Indian specimens, Indian literature reports, and in some instances notes on the species are added. There are detailed descriptions and line drawings of the newly described species, while other species are illustrated to show "various morphotypes in a single genus" (p. 6).

It would have been helpful to provide potential users keys at least to the genera, although the host list provided may facilitate identification. However,

with no diagnostic information included (apart from the host plants) in the species entries, it will be necessary for users to consult original accounts for details necessary to confirm whether they have that taxon or another on the same host. Nevertheless, this book represents an incredible amount of dedicated work and provides the necessary basis for future revisionary studies using molecular phylogenetic methods — something necessary to resolve unequivocally species circumscriptions and the extent of host specificities in the cercosporoid fungi.'

Chupp C. 1954. A monograph of the fungus genus *Cercospora*. Ithaca, NY: C. Chupp.

Crous PW, Braun U. 2003. *Mycosphaerella* and its anamorphs. 1. Names published in *Cercospora* and *Passalora*. Utrecht: Centraalbureau voor Schimmelcultures.

Vasudeva RS. 1963. Indian *Cercosporae*. New Delhi: Indian Council of Agricultural Research.

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BASIDIOMYCETES

***Strophariaceae* s.l.** By M.E. Noordeloos, 2011. FUNGI EUROPAEI 13. Edizioni Candusso, Via Ottone Primo 90, 17021 Alassio SV, Italy. <maxcandusso@libero.it>. ISBN 978-88-905310-0-2. Pp. 648, pl. 377, figs 43. Price 69.00 €.

The *Strophariaceae* is one of the families in the *Agaricales* whose concept has undergone huge changes — thanks to insights derived from DNA-based phylogenetic analyses. In the morphological sense, it consisted of the brown-spored *Pholiota* and the purple-grey dark-spored genera *Stropharia*, *Psilocybe*, and *Hypholoma*. According to Matheny et al.'s (2007) pivotal work, the family forms one clade with the *Hymenogastraceae* and together they harbour, in addition to the traditional genera, *Hebeloma*, *Galerina*, *Agrocybe*, *Phaeocollybia*, and *Alnicola* (*Naucoria*).

Contrary to what is suggested by the book title, the book deals with the family as originally described and excluding the modern additional genera: in other words, *Strophariaceae* p.p. would have been a better title. However, as changes in the genus concepts as depicted in recently published phylogenies (e.g. Matheny et al. 2007) are accepted, the following genera are included: *Deconica* (including *Melanotus*), *Flammula*, *Hemistropharia*, *Hypholoma*, *Kuehneromyces*, *Leratiomyces*, *Meottomyces*, *Phaeonematoloma*, *Pholiota*, *Psilocybe*, and *Stropharia*. This is a very welcome departure from the broad

genus concept as given by the same author in his floristic treatment of this group for the Dutch agaric flora (Noordeloos 1999). For *Pholiota,* the recent European monograph by Holec (2001) is used as a template.

This book follows the general lay-out of the series, with an introduction providing a history of the family and now current concepts and ideas, a short introduction to the characters that are of value for the identification of the species, and the taxonomic part that gives keys to the genera and species, species descriptions, black-and-white drawings of microscopical characters, a list of references, and almost 200 pages of colour photos —mainly of the fruitbodies in their natural habitat, but also with a number of spore photos and reproductions of important historical illustrations.

The book is bilingual throughout, with the original English text translated into Italian.

The strength of this publication lies in the combination of descriptions and illustrations; especially priceless is that multiple photos are given for many species.

The keys are not easy to use, mainly because the differences between the species are often subtle and difficult to put into words. I find it very frustrating that the differences between *Stropharia* and *Leratiomyces* are not more clear-cut, and I keep wondering whether acanthocytes are really restricted to the genus *Stropharia*. As with any publication of this size, it is easy to find mistakes that could have been caught during the publication process.

This book deserves to find a wide use, and not only in Europe. The price is very reasonable for the amount of information this volume holds.

Holec J. 2001. The genus *Pholiota* in central and western Europe. Libri botanici 20.

Matheny PB, Curtis JM, Hofstetter V, Aime MC, Moncalvo J-M, Ge Z-W, Yang Z-L, Slot JC, Ammirati JF, Baroni TJ, Bougher NL, Hughes KW, Lodge DJ, Kerrigan RW, Seidl MT, Aanen DK, DeNitis M, Daniele GM, Desjardin DE, Kropp BR, Norvell LL, Parker A, Vellinga EC, Vilgalys R, Hibbett DS. 2007 ["2006"] Major clades of *Agaricales*: a multilocus phylogenetic overview. Mycologia 98: 982–995.

Noordeloos ME. 1999. *Strophariaceae*. In Bas et al. (editors) Flora agaricina neerlandica 4: 27–106. A.A. Balkema, Rotterdam.

Revision of Malaysian species of *Boletales* s.l. (*Basidiomycota*) described by E.J.H. Corner (1972, 1974). By E. Horak, 2011. [Malaysian Forest Records 51]. Forest Research Institute Malaysia, 52109 Kepong, Selangor Darul Ehsan, Malaysia. <FRIM_Publications@frim.gov.my>. Pp. 245, figs. 127. US$ 53.

The 1972 publication of E.J.H. Corner's *Boletus* in Malaysia (and a 1974 follow-up publication) represents a landmark in the taxonomy of boletoid

fungi. The importance of this work is twofold. First, it provides the first (and still largely unsurpassed) extensive exposition of the prodigious biodiversity of boletes in tropical East Asia. Corner (1972) described nearly 100 new bolete species; furthermore, he noted that many species could not be described due to the sheer abundance of collections and environmental conditions that caused many to decompose before they could be examined, as well as to the abundance of suitable habitat, stating in regard to the latter: "When I consider the immense number of places unexplored mycologically in Malaysia, I think 300 species of boleti may be no exaggeration." Second, Corner's book called into question the tidiness of generic concepts that were constructed around the comparatively depauperate north temperate mycota. Corner maintained that the defining characteristics of many bolete genera (such as color of the spore deposit) did not hold when tested by the tropical mycota, but rather exhibited a continuum between genera.

Despite the importance of this work, its impact on —and utility for— subsequent taxonomic studies in tropical Asia and Australasia has been somewhat diminished by taxonomic out-datedness and the restricted availability of type collections and other material examined by Corner. In accordance with his observations on intergradation of characters between genera, Corner (1972) recognized only four bolete genera —*Boletus*, *Gyroporus*, *Heimiella* (now *Heimioporus*), and *Strobilomyces*— while placing many taxa under subgenera (e.g., *Austroboletus*, *Leccinum*, *Tylopilus*) that are widely recognized at generic rank by other workers. Therefore, many taxa are in need of nomenclatural revision to bring them up to date with current taxonomic concepts. As a result of high humidity in both field and herbarium storage localities, primitive field conditions for drying specimens, and storage methods, many of Corner's collections were damaged by molds, degraded by storage in alcohol formalin (or hardened by evaporation of AF during storage), or rendered toxic by treatment with mercuric chloride; restricted access to collections and restricted accessibility of important microcharacters have been the result.

Given the importance of Corner's collections and the difficulties inherent in their study, the present revision by Egon Horak is a most welcome and important contribution to the taxonomic study of boletes. Dr. Horak presents revised descriptions of taxa combining information from Corner's original protologues and Latin diagnoses (the latter translated into English to facilitate study), data gained from additional studies of Corner's holotypes and other collections, and data from studies of holotype collections from other collectors (including Baker, Heim, Höhnel, Hooker, and Ridley, among others) for those species included but not described by Corner. Horak provides analyses of 160 (124 accepted, 22 doubtful, and 14 rejected, excluded, or invalid) species, including emended descriptions, line drawings of microscopic features (127 figures),

lists of observations and conclusions from his studies, and nomenclatural changes necessary for bringing the nomenclature of Corner's taxa up-to-date with current concepts. Additional features include taxonomic keys to all of the treated taxa, a list of additional important taxonomic studies of boletes from the Far East, a synopsis of all of the treated taxa arranged by currently accepted genus, and species list indexed by specific epithet. Perhaps most importantly, Horak brings to this study his own extensive personal experience working in Malaysia and the Asian tropics, and is therefore able to conceptualize Corner's taxa in a broad comparative context.

Any taxonomic revision requires some judgments as to the placement of species in more inclusive taxa. In the boletes, a longstanding taxonomic issue involves character weighting of species with pale short-elliptical or phaseoliform basidiospores; an example of this issue is *Rubinoboletus*, in which species have been placed that share this spore morphology but differ significantly in other characteristics (see Osmundson and Halling 2010). In the present revision, Horak places a number of species with pale phaseoliform basidiospores in *Gyroporus*, and in so doing emphasizes spore morphology over characteristics (e.g., presence/absence of clamp connections, orientation of hyphae in the stipe) emphasized by some previous authors. In the case of *Gyroporus balloui* (Peck) E. Horak (= *Tylopilus balloui* (Peck) Singer), this placement is contradicted by molecular evidence presented after the preparation of Dr. Horak's volume (Osmundson and Halling 2010), but other species remain to be evaluated in the light of DNA sequence data. In the meantime, a provisional placement based on spore morphology seems reasonable; this example emphasizes that some of our present taxonomic concepts contain inherent contradictions and may very well change in the light of additional data and analyses.

In *Boletus* in Malaysia, Corner – considering existing taxonomic problems in the boletes – wrote, "I have no doubt that if the fungus flora of Malaysia can be explored before the destruction of the main forests or the elimination of the non-commercial trees, fresh discoveries will resolve these problems." Biodiversity discovery, conservation, and the solution to taxonomic problems share the need for carefully researched scholarly work on the description and revision of species and higher taxa. Horak states that "the present revision is only one further step in the direction to unravel the numerous bolete taxa described from SE-Asia and Australasia;" however, his "one further step" is a critical one: by providing a detailed re-examination of Corner's specimens and by bringing the taxonomy of Corner's taxa into a modern context, Horak has made two highly valuable contributions to the study of boletes. In this outstanding volume, Horak will not only earn the gratitude of boletologists, but has provided an important tool for assessing diversity, rarity, endemicity and —unfortunately, but quite likely, given the extent and rate of forest conversion

in Malaysia— extinction of the morphologically striking and ecologically important bolete fungi of the East Asian tropics.

Corner EJH. 1972. *Boletus* in Malaysia. Government Printing Office, Singapore. 263 pp.

Corner EJH. 1974. *Boletus* and *Phylloporus* in Malaysia: further notes and descriptions. Garden's Bull. Singapore 27:1-16.

Osmundson TW, Halling RE. 2010. *Tylopilus oradivensis* sp. nov.: a newly described member of the *Tylopilus balloui* complex from Costa Rica. Mycotaxon 113: 475–483. http://dx.doi.org/10.5248/113.475

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MYCOFLORISTICS

A guidebook to the macrofungi of Fraser's Hill. By B.K. Thi, S.S. Lee, N. Zanuddin & H.T. Chan, 2011. SIRI ALAM DAN RIMBA NO. 14. Forest Research Institute Malaysia, 52109 Kepong, Sealngor Darul Ehsan, Malaysia, <FRIM_Publications@frim.gov.my>. ISBN 978-967-5221-63-7. Pp xi + 93, plates. Price US$ 23.

This little guide starts with an introduction to Fraser's Hill, situated in the state of Pahang, Malaysia, around 100 km from the capital, Kuala Lumpur. Fraser's Hill is not only a draw for tourists, it is also well known among mycologists (see e.g. Tan et al. 2009). The mountainous terrain is accessible along some well-maintained trails and a road. The world of the fungi is also introduced to the readers, after which the main part follows with photos and short descriptions and notes on the most colourful and attractive mushroom-forming fungi of all taxonomic groups. It is a pleasure to see that the showy purple floccose *Lepiota*-like species, recently placed in the new genus *Coniolepiota* (Vellinga et al. 2011), is also present in this part of Malaysia, and that another *Lepiota*-like taxon in the *L. furfuraceipes* group (described from China) extends into Malaysia as well. A nice collection of boletes is illustrated. We hope that this book will be widely available at the park, opening the eyes of the visitors to the exciting world of fungi. And that it will serve as an example for other forests in Malaysia and beyond.

Tan Y-S, Desjardin DE, Perry BA, Vikineswary S, Noorlidah A. 2009. *Marasmius* sensu strico in Peninsular Malaysia. Fungal Diversity 37: 9–100.

Vellinga EC, Sysouphanthong P, Hyde KD. 2011. The family *Agaricaceae*: phylogenies and two new white-spored genera. Mycologia 103: 494–509. http://dx.doi.org/10.3852/10-204

Los hongos de Panamá. Introducción a la identificación de los macroscópicos. By G. Guzmán & M. Piepenbring, 2011. Pp. 386. pl. 798. Price US$ 45.

Panama is a well-known biodiversity hotspot, and yet, little is known about its fungal diversity. Recently a preliminary checklist of fungi was published (Piepenbring 2006) in which around 1800 taxa are listed. A new, richly illustrated book of this Central American state shows the diversity of the macrofungi and demonstrates that our knowledge of the fungi is still insufficient with many species still to be undescribed.

The book is divided into four parts: an introduction to the country, its habitats, and the fungi; the classification of the fungi; a key to the species treated in the book; and lastly, but most importantly, the species are introduced. They are treated alphabetically with colour photos provided for each species and with line drawings of microscopical details also present. A glossary, index, and a list of the species in a taxonomic framework complete the work.

A bit unusual, but welcome, for a book like this is that lichens are also included as well as the slime molds.

The illustrations are often quite large, covering a complete page. In many cases, several photos are given for one species, showing the mushroom from different angles or in different stages.

It is really interesting to see that some 'temperate' species —such as *Cortinarius violaceus*— occur in Panama. But the highlight of a book like this is that it introduces non-tropical readers to the unfamiliar forms and shapes of tropical fungi such as *Staheliomyces cinctus* and *Poronia oedipus*.

The genus names are in many cases not quite up to date (e.g. *Collybia* for what now is called *Gymnopus*; *Coprinus* instead of *Coprinopsis*); photos are not always sharp, and colours seem to be a little off in several cases.

But the biggest asset of a book like this is that it shows clearly that the times of fungal discovery and taxonomy are far from over.

Piepenbring, M. 2006. Checklist of fungi in Panama. Preliminary version. Puente Biológica 1: 1-190.

Book Announcement

***Ustilaginales* of India.** By R.V. Gandhe, 2011. Bishen Singh Mahendra Pal Singh, 23-A, New Connaught Place, Dehra Dun, 248001 India, <bsmps@vsnl.com>. ISBN 978-81-211-0788-4. 414 pp. ill. circa US$ 154.00